
UI HACKING EXPLAINED, EPISODE 2 REVENGE OF SFX2 API

KATARINA BEHRENS
CIB LABS
LIBRE OFFICE CONFERENCE BRNO
AUGUST 24, 2017



“sfx1 was a beautifully designed, bug free, fully inline documented piece of art; then the disk crashed, and sfx2 had to be created in a rush “

-Stephan Bergmann-



Ctrl-C Ctrl-V

Every time you copy and paste the code,
G*d kills a kitten

1 | 2

UNO COMMANDS RECAP

UNO COMMANDS ARE EVERYWHERE

in toolbars



sc/uiconfig/scalc/toolbar/*.xml

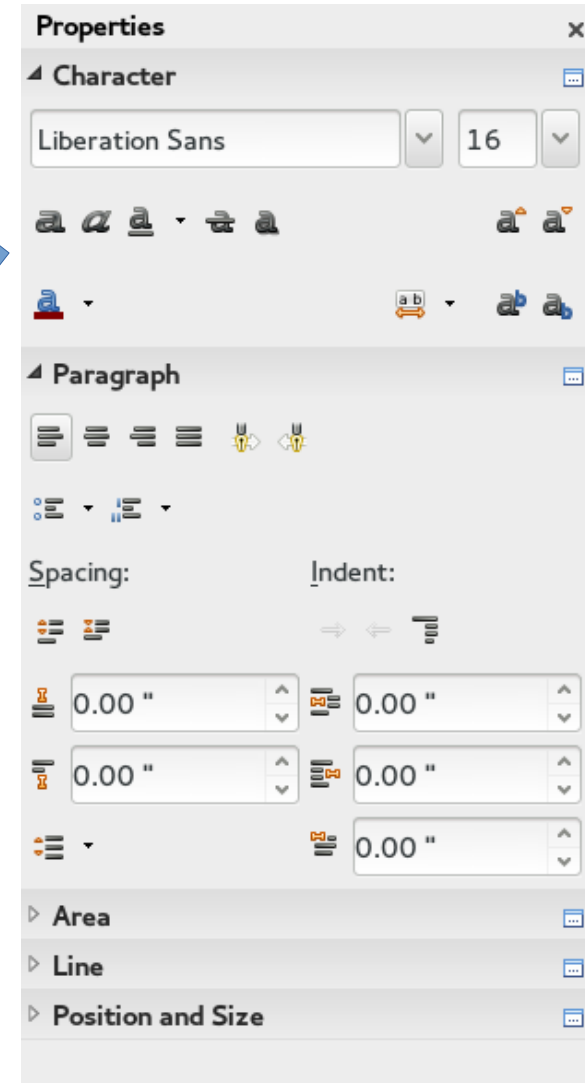
```
<toolbar:toolbaritem xlink:href=".uno:Undo"  
toolbar:visible="true|false"  
toolbar:helpid="42"  
toolbar:style=dropdown/>
```

UNO COMMANDS ARE EVERYWHERE

- in sidebar panels:

```
<child>
  <object class="sfxlo-
SidebarToolBox" id="font">
    ...
    <child>
      <object class="GtkToolButton"
id="fontname">
        <property
name="visible">True</property>
```

```
        ...
        <property
name="action_name">.uno:Bold</pro
perty>
      </object>
```



sc/uiconfig/scalc/ui/sidebar*.ui

CENTRAL STORAGE OF UNO COMMANDS

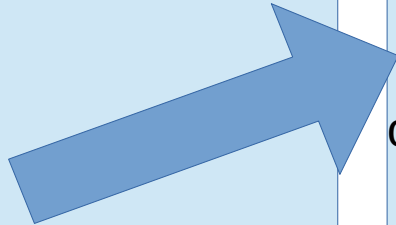
- officecfg/data/org/*/GenericCommands.xcu
 - commands shared by all apps
- Writer | Calc | DrawImpressCommands.xcu
 - app-specific

CENTRAL STORAGE OF UNO COMMANDS

- officecfg/data/org/*/GenericCommands.xcu
 - commands shared by all apps
- Writer | Calc | DrawImpressCommands.xcu
 - app-specific

FROM MENU TO UNO COMMAND

```
<menu:menu
menu:id=".uno:CellContentsMenu">
  <menu:menupopup>
    <menu:menuitem
menu:id=".uno:Calculate"/>
    <menu:menuitem
menu:id=".uno:ConvertFormulaToValue"/>
```



```
<node oor:name=".uno:Calculate"
oor:op="replace">
  <prop oor:name="Label"
oor:type="xs:string">
    <value xml:lang="en-
US">~Recalculate</value>
  </prop>
</node>
```

sc/uiconfig/scalc/menuconfig/menubar.xml

officecfg/data/org/*/CalcCommands.xcu

UNO COMMANDS ALSO HAVE HOTKEYS

- officecfg/data/org/*/Accelerators.xcu:

```
<node oor:name="F9" oor:op="replace">
```

```
<prop oor:name="Command">
```

```
<value xml:lang="x-no-translate">I10N SHORTCUTS - NO TRANSLATE</value>
```

```
<value xml:lang="en-US">.uno:Calculate</value>
```

```
</prop>
```

```
</node>
```

Localizable hotkeys :)

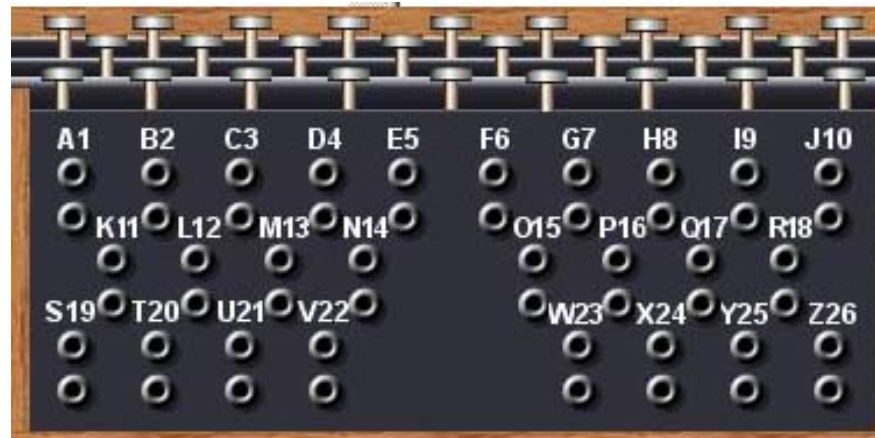


2 | 2

TIME SLOT FOR SLOTS

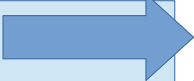
SLOTS? WHAT SLOTS?

- Slots connect user interface elements with (C++) functions
- They live in .sdi files



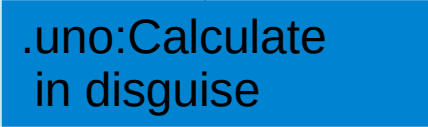
UNO COMMAND TO SLOT

```
<node oor:name=".uno:Calculate"  
oor:op="replace">  
  <prop oor:name="Label"  
oor:type="xs:string">  
    <value xml:lang="en-  
US">~Recalculate</value>  
  </prop>  
</node>
```



officecfg/data/org/*/CalcCommands.xcu

```
SfxVoidItem Calculate FID_RECALC  
(  
[ AutoUpdate = FALSE,  
  FastCall = FALSE,  
  ReadOnlyDoc = TRUE,  
  Toggle = FALSE,  
  Container = FALSE,  
  RecordAbsolute = FALSE,  
  RecordPerSet;  
  
  AccelConfig = TRUE,  
  MenuConfig = TRUE,  
  ToolBoxConfig = FALSE,  
  GroupId = GID_OPTIONS;  
]
```

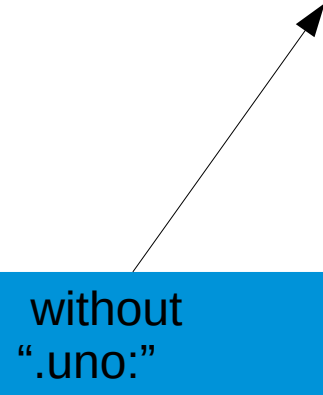


sc/sdi/scalc.sdi

WHERE IS THE SLOT FOR THIS COMMAND?

- Secret tip:

```
find . -name *.sdi | xargs grep -w 'SomeCommand'
```



without
".uno:"

WHAT ARE THOSE .SDI FILES?

- Two types of .sdi files:
 - slot definitions (how slots behave)
 - slot interface (how slots are organized to shells and how they connect to C++ classes and functions)
- Processed by svidl compiler
 - into long arrays of pointers to functions

SLOT DEFINITION

```
SfxVoidItem Calculate FID_RECALC
```

```
()
```

```
[ AutoUpdate = FALSE,  
  FastCall = FALSE,  
  ReadOnlyDoc = TRUE,  
  Toggle = TRUE,  
  Container = FALSE,  
  RecordAbsolute = FALSE,  
  RecordPerSet;
```

```
  AccelConfig = TRUE,  
  MenuConfig = TRUE,  
  ToolBoxConfig = TRUE,  
  GroupId = GID_OPTIONS;
```

```
]
```

Q: How do I make my toolbar button a binary toggle ?

Q: How can I include my UNO command and related slot in a toolbar

sc/sdi/scalc.sdi

SFX ITEMS

```
SvxPageItem AttributePage SID_ATTR_PAGE
```

```
()
```

```
[ AutoUpdate = FALSE,  
  FastCall = FALSE,  
  ReadOnlyDoc = TRUE,  
  Toggle = FALSE,  
  Container = FALSE,  
  RecordAbsolute = FALSE,  
  RecordPerSet;
```

```
  AccelConfig = TRUE,  
  MenuConfig = TRUE,  
  ToolBoxConfig = FALSE,  
  GroupId = GID_OPTIONS;
```

```
]
```

sc/sdi/scalc.sdi

.uno:AttributePage

SvxPageItem

landscape/portrait
layout
numbergin

SID_ATTR_PAGE

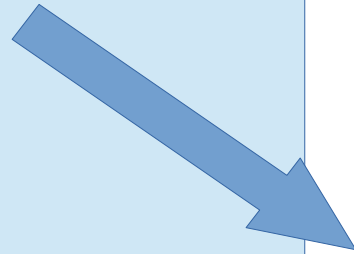
sc/sdi/docsh.sdi

SLOT TO SLOT INTERFACE

```
SfxVoidItem Calculate FID_RECALC
()
[ AutoUpdate = FALSE,
  FastCall = FALSE,
  ReadOnlyDoc = TRUE,
  Toggle = FALSE,
  Container = FALSE,
  RecordAbsolute = FALSE,
  RecordPerSet;

  AccelConfig = TRUE,
  MenuConfig = TRUE,
  ToolBoxConfig = FALSE,
  GroupId = GID_OPTIONS;
]
```

sc/sdi/scalc.sdi



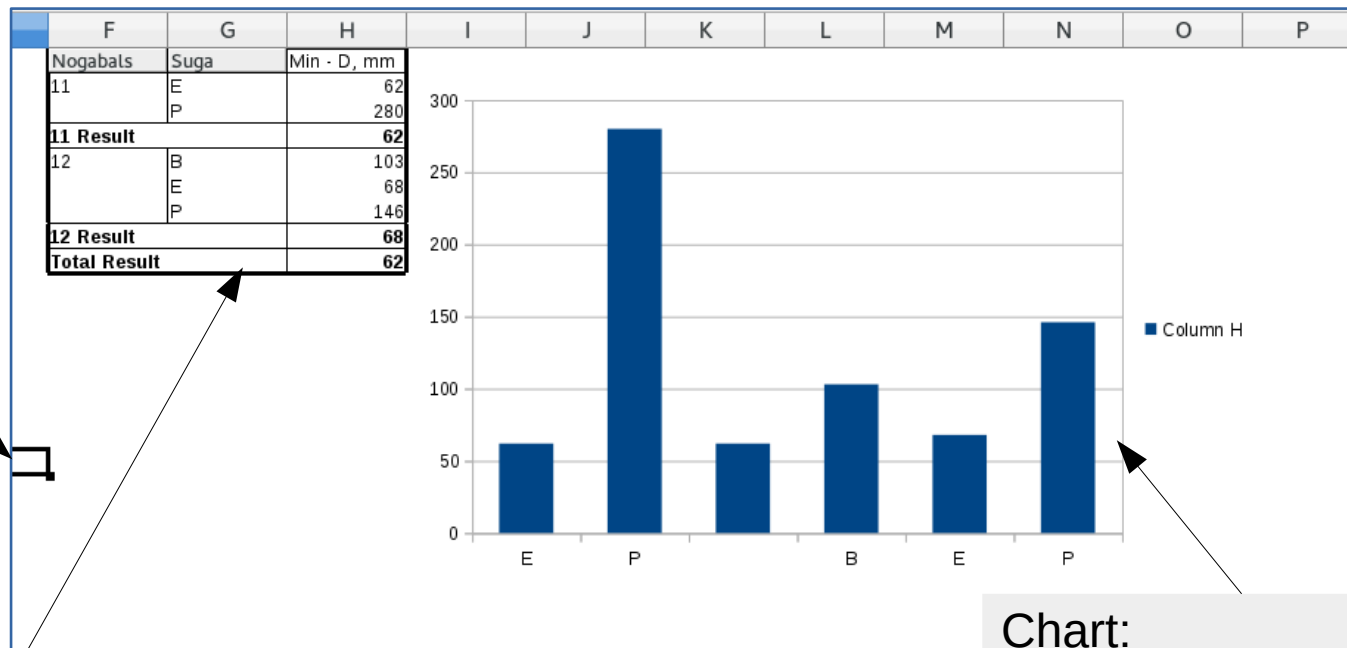
```
interface TableDocument
[
  ...
  FID_RECALC [ ExecMethod=Execute;
               StateMethod=GetState;
             ]
  ...
]
shell ScDocShell
[ interface TableDocument ]
```

sc/sdi/docsh.sdi

SHELLS: DIFFERENT FUNCTIONS FOR DIFFERENT CONTEXTS

Cells:

- format cells
- insert image
- delete content



Pivot table:

- edit layout
- insert subtotals

Chart:

- format data series
- insert data labels
- format axes

SLOT INTERFACE TO SHELL

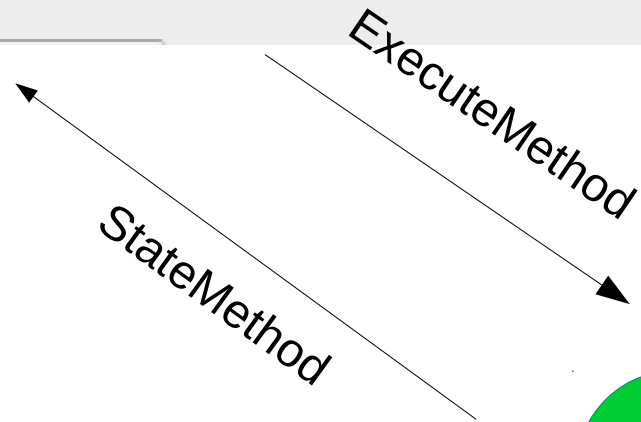
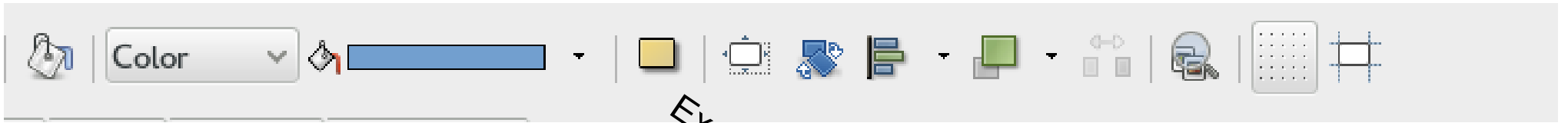
```
interface TableDocument
[
...
FID_RECALC [ ExecMethod=Execute;
                StateMethod=GetState;
                ]
...
]
shell ScDocShell
[ interface TableDocument ]
```

sc/sdi/scalc.sdi

```
void ScDocShell::Execute( ... )
{
    switch (nSlotId)
    { ...
      case (FID_RECALC):
        DoRecalc();
        break;
    }
}
```

sc/source/ui/docshell/docsh4.cxx

EXECUTE & GET STATE



TROUBLESHOOTING SOME COMMON PROBLEMS

- Q: Help! My UI element doesn't pick up the new state
- A: Put a breakpoint into your GetState Method

- Q: Help! No matter what I do, my toolbar button stays disabled
- A: Try to find the code disabling the slot

THANK YOU!

